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Translation of Priority Document

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Date of Application : November 12, 2002

Applicant(s) : Samsung Electronics Co., Ltd.

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COMMISSIONER

[ABSTRACT OF THE DISCLOSURE]

[ABSTRACT]

The present invention discloses a portable terminal which can provide stereo sound. The portable terminal includes: a phone body having a plurality of keys
5 and a microphone, which are disposed on an upper surface of the phone body; a folder having a main speaker and a main LCD, which are disposed on a lower surface of the folder; a hinge unit including a pair of side hinge arms and a center hinge arm, which enable the folder to be rotated away from or towards the
10 phone body, the side hinge arms being opposed to each other at one side of the phone body, the center hinge arm being disposed between the side hinge arms; a pair of side speakers provided at the side hinge arms, respectively, the side speakers being oriented in opposite directions along a hinge axis of the portable terminal, so that the side speakers produce sound in opposite directions along the hinge axis; and speaker covers arranged along the hinge axis to cover the side
15 speakers.

[REPRESENTATIVE FIGURE]

FIGURE 2

[INDEX]

Stereo speaker, Portable terminal

[SPECIFICATION]

[TITLE OF THE INVENTION]

PORTABLE PHONE WITH STEREO SOUND

5 [BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a plan view of a portable terminal according to a preferred embodiment of the present invention, in which a folder of the terminal is closed;

FIG. 2 is a perspective view of a portable terminal according to a preferred embodiment of the present invention, in which a folder of the terminal
10 is open;

FIG. 3 is a front view of the portable terminal shown in FIG. 2;

FIG. 4 is a left side view of the portable terminal shown in FIG. 1;

FIG. 5 is a right side view of the portable terminal shown in FIG. 1;

FIG. 6 is a rear view of the portable terminal shown in FIG. 1; and

15 FIG. 7 is a partly cut-out front view of the portable terminal, which shows an enlarged view of a pair of speaker systems employed in the portable terminal, according to the present invention.

[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]

20 [OBJECT OF THE INVENTION]

[RELATED FIELD AND PRIOR ART OF THE INVENTION]

The present invention relates to a portable terminal, and more particularly to a portable terminal, which has a pair of speakers to provide stereo
25 sound.

In general, a "portable terminal" means an electronic device which a user can carry with him/her to perform wireless communication with a desired partner. Conventional portable terminals may be classified into various types according to their appearance, such as bar-type portable terminals, flip-type portable terminals,
30 and folder-type portable terminals. The bar-type portable terminal has a single housing shaped like a bar. The flip-type portable terminal has a flip which is

pivotably mounted to a bar-shaped housing by a hinge unit. The folder-type portable terminal has a folder coupled to a single bar-shaped housing by a hinge unit in such a manner that the folder can be rotated in order to be folded to or unfolded from the housing.

5 Further, the portable terminals may be classified into neck wearable type terminals and wrist wearable type terminals according to the position at or the way in which a user puts on the terminal. The neck wearable type terminal is one which a user wears around the neck using a string, while the wrist wearable type terminal is one which a user wears around the wrist.

10 Additionally, the portable terminals may be classified into rotation-type terminals and sliding-type terminals according to ways of opening and closing the terminals. In the rotation-type portable terminal, two housings are coupled to each other in a manner that one housing rotates to be opened or closed relative to the other while facing each other. In the sliding-type portable terminal, two
15 housings are coupled to each other in a manner that one housing slides to be opened or closed relative to the other. These variously classified portable terminals are easily understood by those skilled in the art.

Meanwhile, each of the conventional portable terminals enumerated above is necessarily equipped with an antenna device, a data input/output device,
20 and a data transmission/reception device. As a data input device, a keypad which enables data to be inputted through pressing by fingers is usually employed, while a touch pad or touch screen is sometimes employed. As a data output device, an LCD is usually employed.

A keypad usually employed for data input has an arrangement of
25 multiple keys including numeric keys, character keys, a SEND key, an END key, and functional keys. Usually, about 15 to 20 keys, such as those mentioned above, are arranged at proper locations of an upper surface of a portable terminal. Of course, such keys are exposed on the upper surface of a portable terminal, so that a user can input data by pressing the keys by fingers. Moreover, the
30 conventional portable communication apparatuses may have a camera lens or a

photographing means which enables a user to make an image communication with a desired partner or to take a photograph of a desired subject.

However, since users of the portable terminals have revealed a gradually increasing desire for information, it is in fact inconvenient to use the conventional portable terminals for communication in an Internet environment or multimedia environment. Especially, it is inconvenient for a user to view a video-on-demand or watch television by means of the conventional portable terminals, in that each of the conventional portable terminals has a single speaker by which the user can listen to the sound.

10

[SUBSTANTIAL MATTER OF THE INVENTION]

Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and an object of the present invention is to provide a portable terminal, which has a pair of speakers provided at hinge arms of the portable terminal.

It is another object of the present invention to provide a portable terminal, which has a pair of speakers opposed to each other and disposed along a hinge axis of the portable terminal, so that the portable terminal can provide stereo sound.

In order to accomplish this object, there is provided a portable terminal comprising: a phone body having a plurality of keys and a microphone, which are disposed on an upper surface of the phone body; a folder having a main speaker and a main LCD, which are disposed on a lower surface of the folder; a hinge unit including a pair of side hinge arms and a center hinge arm, which enable the folder to be rotated to go away from or come towards the phone body, the side hinge arms being opposed to each other at one side of the phone body, the center hinge arm being disposed between the side hinge arms; a pair of side speakers provided at the side hinge arms, respectively, the side speakers being oriented in opposite directions along a hinge axis of the portable terminal, so that the side speakers produce sound in opposite directions along the hinge axis; and

speaker covers arranged along the hinge axis and opposed to the speakers, respectively.

In accordance with another aspect of the present invention, there is provided a portable terminal comprising: a phone body having a pair of side
5 hinge arms laterally protruding at one side of the phone body; a folder having a center hinge arm disposed between the side hinge arms; a pair of side speakers provided at the side hinge arms and oriented in opposite directions along a hinge axis of the portable terminal; and speaker covers arranged along the hinge axis and opposed to the speakers, respectively.

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[CONSTRUCTION AND OPERATION OF THE INVENTION]

Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings. In the
15 following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

As shown in FIGs. 1 to 7, a portable terminal according to a preferred embodiment of the present invention includes a pair of speakers S1 and S2 and a
20 pair of speaker covers 32 and 34, which are disposed along a hinge axis A and opposite to each other. Specifically, the portable terminal illustrated in the figures is a folder-type terminal.

The folder-type terminal includes a phone body 10, a folder 20, and a hinge unit. The phone body 10 has a plurality of keys 12 and a microphone 14,
25 which are disposed on an upper surface of the phone body 10. The folder 20 has a main speaker 22 and a main Liquid Crystal Display (LCD) 22, which are disposed on a lower surface of the folder 20. The hinge unit includes a pair of side hinge arms 15a and 15b and a center hinge arm 26, which enable the folder 20 to be rotated to go away from or come towards the phone body 10. The side
30 hinge arms 15a and 15b are opposed to each other at one side of the phone body 10, and the center hinge arm 26 is disposed between the side hinge arms 15a and

15b.

Preferably, the portable terminal according to the present invention further includes a pair of side speakers S1 and S2 which are provided at the side hinge arms, respectively. The side speakers S1 and S2 are oriented in opposite
5 directions along the hinge axis A, so that they produce sound in opposite directions along the hinge axis A.

Further, the speaker covers 32 and 34 protect the side speakers S1 and S2, respectively, from the outside environment. The speaker covers 32 and 34 are arranged along the hinge axis A and face the speakers S1 and S2, respectively.
10 Moreover, each of the speaker covers 32 and 34 has a convex shape to surround the speakers S1 and S2, respectively.

The center hinge arm 26 is formed integrally with the folder 20 and has a camera lens 28 and a center key 27. The camera lens 28 is disposed adjacent to a sub LCD 25 on an upper surface 20a of the folder, and the center key 27 is
15 adjacent to the main LCD 24 on the lower surface 20b of the folder. The center key 27 is used to switch the portable terminal into a camera operation mode.

In addition, the side hinge arms 15a and 15b have grooves 16a and 16b formed on their upper surfaces, respectively. Therefore, when the folder 20 has been closed to the phone body 10, corners 20c and 20d of the shoulder of the
20 folder can be seated in the grooves 16a and 16b.

When the portable terminal according to the present invention is in a state as shown in FIG. 1, a user can make an image communication with a partner while facing the partner by means of the camera lens 28 and the sub LCD 25. In contrast, when the portable terminal according to the present invention is in a
25 state as shown in FIG. 2, a user can either take a photograph of a desired subject by means of the camera lens 28 and the main LCD 24 or view a picture or movie by means of the main LCD 24 and the side speakers S1 and S2. In this case, the user can hear stereo sound through the side speakers S1 and S2.

While the invention has been shown and described with reference to
30 certain preferred embodiments thereof, it will be understood by those skilled in

the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

5 [EFFECTS OF THE INVENTION]

As described above, a portable terminal according to the present invention includes a pair of side speakers, which are opposite to each other and disposed beside a pair of side hinge arms arranged along a hinge axis A.

10 Therefore, the portable terminal can provide stereo sound to a user of the terminal.